LISTING OF CLAIMS

1. (Currently amended) A method of diagnosing a subject with erosive arthritis comprising measuring how many osteoclast precursor cells (OCP) are in the blood of the subject and correlating the number of OCP in the blood of the subject with the presence of erosive arthritis, wherein an significant increase in the number of OCP in the subject relative to a healthy control subject having no erosive arthritis indicates the presence of erosive arthritis.

2. (Previously presented) The method of claim 1, wherein the OCP in the blood are obtained by collecting the subject's Peripheral Blood Mononuclear Cells (PBMCs).

3. (Original) The method of claim 2, wherein the step of measuring comprises counting the number of cells comprising at least one marker selected from the group consisting of CD14, CD11a, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), CD16, MHC Class II, B7.1, B7.2, CD40, and c-fms.

4. (Original) The method of claim 2, wherein the step of measuring comprises counting the number of cells comprising at least two markers selected from the group consisting of CD14, CD11a, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), CD16, MHC Class II, B7.1, B7.2, CD40, and c-fms.

5. (Original) The method of claim 2, wherein the step of measuring comprises counting the number of cells comprising at least three markers selected from the group consisting of CD14, CD11a, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), CD16, MHC Class II, B7.1, B7.2, CD40, and c-fms.

6. (Original) The method of claim 2, wherein the step of measuring comprises counting the number of cells comprising at least four markers selected from the group consisting of CD14, CD11a, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), CD16, MHC Class II, B7.1, B7.2, CD40, and c-fms.

7. (Withdrawn) The method of claim 2, wherein the step of measuring comprises counting the number of cells comprising at least five markers selected from the group consisting of CD14, CD11a, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), CD16, MHC Class II, B7.1, B7.2, CD40, and c-fms.

8. (Withdrawn) The method of claim 2, wherein the step of measuring comprises counting the number of cells comprising at least six markers selected from the group consisting of CD14, CD11a, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), CD16, MHC Class II, B7.1, B7.2, CD40, and c-fms.

9. (Withdrawn) The method of claim 2, wherein the step of measuring comprises counting the number of cells comprising at least seven markers selected from the group consisting of CD14, CD11a, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), CD16, MHC Class II, B7.1, B7.2, CD40, and c-fms.

10. (Withdrawn) The method of claim 2, wherein the step of measuring comprises counting the number of cells comprising at least eight markers selected from the group consisting of CD14, CD11a, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), CD16, MHC Class II, B7.1, B7.2, CD40, and c-fms.

11. (Withdrawn) The method of claim 1, wherein the step of measuring comprises counting the number of cells that are CD16- (negative).

12. Canceled.

13. (Original) The method of claim 1, wherein the amount of OCP is determined by staining the PBMC sample with fluorescently labeled antibodies for at least one marker selected from the group consisting of CD14, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), CD16, CD11a , MHC Class II, B7.1, B7.2, CD40, and c-fms and visualizing the cells with labeled antibody bound to at least one of CD14+, CD11b+, CD51/CD61+, RANK+, CCR1+, CCR4+, VCAM+ (CD106), VLA-4+ (CD49d), CD11a,

MHC Class II, B7.1, B7.2, CD40, c-fms or CD16- (negative) using Fluorescence Activated Cell Sorting (FACS).

14. (Original) The method of claim 1, wherein the number of OCP is determined by removing a tissue sample from the subject and visualizing the sample using immunohistochemistry for at least one marker selected from the group consisting of CD14, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), CD11a , MHC Class II, B7.1, B7.2, CD40, c-fms and CD16.

15. (Currently amended) The method of claim 1, wherein the amount of OCP is measured by ~~removing a tissue~~ obtaining a blood sample from the subject and staining the tissue section with Tartrate Resistant Acid Phosphatase (TRAP), counting how many multinucleated cells there are in the sample from the subject, and comparing the number of multinucleated cells in the blood sample from the subject to a number of multinucleated cells in a blood sample from a healthy control subject having no erosive arthritis, ~~wherein greater than 2.5 times more~~ a significant increase in the number of multinucleated cells in the sample from the subject than in the sample from the healthy control indicates erosive arthritis in the subject.

16. Canceled

17. (Withdrawn) The method of claim 15, wherein the sample is from the synovium of the subject.

18. (Withdrawn) The method of claim 15, wherein the sample comprises perivascular mononuclear cells or bone marrow.

19. (Withdrawn) The method of claim 1, wherein the amount of OCP in the subject's blood is measured using a colorimetric assay, and comparing the amount of OCP in the subject's blood to a standard curve.

20. (Withdrawn) The method of claim 1, wherein the amount of OCP in the subject's blood is measured using a colorimetric assay, and comparing the amount of OCP in the subject's blood to the amount of OCP in a control's blood.

21. (Original) The method of claim 1,wherein the amount of OCP in the subject's blood is measured using FACS methods, Immunohistochemistry methods, Western methods, Southern methods, hybridization methods, RT-PCR methods, ELISA methods, ELISPOT methods, labeling methods, microarray methods, bone wafer resorption methods or Immunoprecipitation methods.

22. Canceled.

23. (Original) The method of claim 1, wherein measuring the number of OCP comprises identifying RANK, CD11b and CD14 positive cells in the blood sample.

24. (Original) The method of claim 1, wherein the subject shows bone erosion on a radiograph.

25. Canceled.

26. (Currently amended) A method of diagnosing erosive arthritis comprising culturing peripheral blood mononuclear cells (PBMC) from a subject and assaying the number of osteoclasts formed and correlating the number of OCP in the PBMC of the subject with the presence of erosive arthritis, wherein ~~an increased~~ a significant increase in the number of osteoclasts in the culture from the subject relative to the number of osteoclasts in a culture of PBMC from a healthy control subject without erosive arthritis indicates the subject has erosive arthritis.

27. (Original) The method of claim 26, wherein assaying the number of osteoclasts formed comprises monitoring the amount of TRAP positive cells.

28. (Original) The method of claim 26, wherein assaying the number of osteoclasts formed comprises monitoring the number of multinucleated cells.

29. Canceled.

30. (Original) The method of claim 26, wherein the culture has no exogenous RANKL or M-CSF added.

31. (Previously presented) The method of claim 26, wherein addition of RANKL or M-CSF increases the number of osteoclasts in the culture from the subject relative to the number of osteoclasts in a culture of PBMC from a control subject without erosive arthritis, and wherein this increase indicates the subject has erosive arthritis.

32. (Withdrawn) A method of diagnosing an inflammatory joint disease comprising culturing peripheral blood mononuclear cells (PBMC) from a subject and measuring the amount of TNF-α secreted.

33. (Previously presented) A method of determining the presence of an erosive arthritis in a subject comprising, obtaining a PBMC sample from the blood of a subject, and measuring how many OCP are in the PBMC of the subject, wherein greater than 2.5 times more OCP in the PBMC of the subject than in a sample from a control subject without erosive arthritis indicates the presence of erosive arthritis in the subject.

34. Canceled.

35. (Currently amended) A method of determining whether a subject has erosive arthritis comprising isolating PBMC from the subject, and probing for the presence of three or more surface markers of mononuclear OCP, wherein the surface markers are selected from the group consisting of CD14, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), CD11a , MHC Class II, B7.1, B7.2, CD40, c-fms and CD16, and wherein a significant increase in the number of mononuclear OCP in the PBMC of the subject as determined by the presence the three or more surface markers relative to a healthy control without erosive arthritis indicates that the subject has erosive arthritis.

36. Canceled.

37. (Original) The method of claim 36, wherein the surface markers are analyzed by FACS.

38. Canceled.

39. Canceled.

40. (Previously presented) The method of claim 35, wherein probing for a surface marker comprises assaying for at least four surface markers.

41. (Withdrawn) The method of claim 35, wherein probing for a surface marker comprises assaying for at least five surface markers.

42. (Withdrawn) The method of claim 35, wherein probing for a surface marker comprises assaying for at least six surface markers.

43. (Withdrawn) The method of claim 35, wherein probing for a surface marker comprises assaying for at least seven surface markers.

44. (Withdrawn) The method of claim 35, wherein probing for a surface marker comprises assaying for at least eight surface markers.

45. Canceled.

46. (Withdrawn) A method of determining whether a subject has an inflammatory joint disease, comprising obtaining PBMC from the subject, culturing the PBMC on cortical bone wafers, and assaying the amount of eroded bone material in the cortical bone wafer.

47. (Withdrawn) The method of claim 46, wherein the culturing occurs for 21 days.

48. (Withdrawn) The method of claim 46, wherein the subject is diagnosed with an inflammatory joint disease if the PBMC from the subject erodes more bone than the PBMC of a control subject.

49. (Withdrawn) A method of determining whether a subject has an inflammatory joint disease comprising assaying whether the osteoclasts of the subject express RANK.

50. (Withdrawn) A method of monitoring the treatment for an inflammatory joint disease in a subject comprising, administering an anti-inflammatory disease agent to the subject, and measuring the number of osteoclast precursor cells (OCP) in the blood of the subject.

51. (Withdrawn) A method of monitoring the treatment for an inflammatory joint disease in a subject comprising, administering an anti-inflammatory disease agent to the subject, obtaining a PBMC sample from the subject, and measuring the number of OCP in the PBMC of the subject, wherein a decrease in the number of OCP in the PBMC of the subject after treatment indicates the anti-inflammatory disease agent is having an effect on the disease.

52. (Withdrawn) A method of treating a subject with an inflammatory joint disease comprising measuring how many OCP are in the PMBC of the subject producing a number of OCP in the subject and administering an anti-inflammatory disease agent if the number of OCP in the PMBC of the subject is greater than a number of OCP in PBMC of a control subject.

53. (Withdrawn) The method of claim 52, wherein the number of OCP are assayed a second time after the administration of the anti-inflammatory disease agent.

54. (Withdrawn) The method of claim 53, wherein the anti-inflammatory disease agent comprises OPG, infliximab, etanercept, adludimab, kinaret, raptiva, osteoprotegerin (OPG), RANKFc, anti-RANKL, Bisphosphonates-pamidronate, alendronate, actonel, zolendronate, clodronate traditional DMARDS-methotrexate, azulfidine, hydroxychloroquine Corticosteroids-prednisone, methylprednisilone

55. (Withdrawn) The method of claim 53, wherein the anti-inflammatory disease agent comprises a composition that binds RANK, wherein the composition inhibits RANKL from binding RANK.

56. (Withdrawn) The method of claim 53, wherein the anti-inflammatory disease agent comprises a composition that binds RANKL, wherein the composition inhibits RANK from binding RANKL.

57. (Withdrawn) The method of claim 53, wherein the composition is an antibody.

58. (Withdrawn) The method of claim 57, wherein the antibody comprises infliximab or adludimab.

59. (Withdrawn) The method of claim 53, wherein the anti-inflammatory disease agent comprises a composition that binds TNF-R1, wherein the composition inhibits TNF-α from binding to TNF-R1.

60. (Withdrawn) The method of claim 59, wherein the composition is an antibody.

61. (Withdrawn) The method of claim 53, wherein the anti-inflammatory disease agent comprises a composition that binds TNF-α, wherein the composition inhibits TNF-R1 from binding to TNF-α.

62. (Withdrawn) The method of claim 61, wherein the composition is an antibody.

63. (Withdrawn) The method of claim 53, wherein the anti-inflammatory disease agent comprises a composition that binds TNF-R2, wherein the composition inhibits TNF-α from binding to TNF-R2.

64. (Withdrawn) The method of claim 63, wherein the composition is an antibody.

65. (Withdrawn) The method of claim 53, wherein the anti-inflammatory disease agent comprises a composition that binds TNF-α, wherein the composition inhibits TNF-R2 from binding to TNF-α.

66. (Withdrawn) The method of claim 65, wherein the composition is an antibody.

67. (Withdrawn) The method of claim 53, wherein the anti-inflammatory disease agent comprises an anti-TNF-α agent.

68. (Withdrawn) The method of claim 67, wherein the composition is an antibody.

69. (Withdrawn) The method of claim 67, wherein the anti-TNF-α agent comprises etanercept or infliximab.

70. (Withdrawn) The method of claim 53, wherein the OCP comprise a marker selected from the group consisting of CD14, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), CD11a , MHC Class II, B7.1, B7.2, CD40, c-fms and CD16-(negative).

71. (Withdrawn) A method of treating a subject with an inflammatory joint disease comprising administering an anti-inflammatory disease agent to the subject, after administering the anti-inflammatory disease agent measuring how many OCP are in the PMBC of the subject, and adjusting the administration of the anti-inflammatory disease agent based on the number of OCP in the PBMC.

72. (Withdrawn) A method of screening the efficacy of a pharmaceutical agent for the ability to treat an inflammatory joint disease comprising measuring the number of OCP in the PBMC of a subject, wherein the pharmaceutical agent was administered to the subject, wherein a decrease in the number of OCP in the subject after treatment indicates efficacy of the pharmaceutical agent.

73. (Withdrawn) A method of identifying a pharmaceutical agent having the ability to treat an inflammatory joint disease comprising measuring the number of OCP in a sample, assaying the number of OCP in sample from a non-treated control, and comparing the number of OCP in the subject and the non-treated control.

74. (Withdrawn) The method of claim 72, wherein the step of measuring comprises treating a PBMC sample with the agent, culturing the cells, and screening for cells comprising at

least one marker selected from the group consisting of CD14, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), and CD11a , MHC Class II, B7.1, B7.2, CD40, c-fms and CD16

75. (Withdrawn) A kit for diagnosing an inflammatory joint disease comprising reagents for identifying a marker selected from the group consisting of CD14, CD11b, CD51/CD61, RANK, CCR1, CCR4, VCAM (CD106), VLA-4 (CD49d), CD11a , MHC Class II, B7.1, B7.2, CD40, c-fms and CD16, and a standard sample of a control subject without an inflammatory joint disease.

76. (Withdrawn) A kit for diagnosing an inflammatory joint disease comprising reagents for identifying an OCP, and a standard sample of a control subject without an inflammatory joint disease.

77. (Withdrawn) The kit of claim 76, wherein the reagent comprises a primer capable of hybridizing to the transcript of the marker.

78. (Withdrawn) The kit of claim 76, wherein the reagent comprises a composition capable of binding to the marker.

79. (Withdrawn) The kit of claim 78, wherein the composition comprises an antibody.

80. (Withdrawn) A method of determining whether to continue administering an anti-inflammatory disease agent in a subject with an inflammatory joint disease comprising determining the number of OCP present in the subject after administration of the anti-inflammatory disease agent a first time, determining the number of OCP present in the subject after administration of the anti-inflammatory disease agent at a second time, comparing the number of OCP in the subject at the first time and at the second time, and if the number of OCP is less at the second time than at the first time, continuing administration of the anti-inflammatory disease agent.

81. (Withdrawn) A method of determining whether to continue administering an anti-inflammatory disease agent in a subject with an inflammatory joint disease comprising measuring the number of OCP in the subject before administering, measuring the number of OCP in the subject after administering, wherein a decrease in the number of OCP after administering relative to the number of OCP before administering indicates that the subject is responding to the anti-inflammatory disease agent.

82. (Withdrawn) The method of claim 80, wherein the anti-inflammatory disease agent comprises an anti-TNF agent.

83. (Withdrawn) The method of claim 80, wherein the anti-TNF agent comprises etanercept, infliximab, or adalimumab.

84. (Withdrawn) The method of claim 80, wherein the disease comprises rheumatoid arthritis, psoriatic arthritis, psoriasis, Crohn's disease, or ankylosing spondylitis.

85. (Withdrawn) The method of claim 80, wherein the measuring after administering the anti-inflammatory disease agent occurs at least one month after administering the agent.

86. (Withdrawn) The method of claim 80, wherein the measuring after administering the anti-inflammatory disease agent occurs at least two months after administering the agent.

87. (Withdrawn) The method of claim 80, wherein the measuring after administering the anti-inflammatory disease agent occurs at least three months after administering the agent.

88. (Withdrawn) The method of claim 80, wherein the measuring after administering the anti-inflammatory disease agent occurs at least four months after administering the agent.

89. (Withdrawn) The method of claim 80, wherein the measuring after administering the anti-inflammatory disease agent occurs at least five months after administering the agent.

90. (Withdrawn) The method of claim 80, wherein the measuring after administering the anti-inflammatory disease agent occurs at least six months after administering the agent.

91. (Withdrawn) The method of claim 80, further comprising continuing administering the anti-inflammatory disease agent if the number of OCP has decreased.

92. (Withdrawn) The method of claim 91, wherein administering the anti-inflammatory disease agent continues even if there is not a clinical improvement in the subject at the time of measuring the OCP.

93. (Withdrawn) The method of claim 92, wherein the clinical improvement is determined by assessing the number of tender or swollen joints, the Psoriasis Assessment Severity Index, a global clinical assessment of the subject, assessing erythrocyte sedimentation rate, or assessing the amount of C-reactive protein level.

94. (New) The method of claim 1, wherein the amount of OCP is measured by obtaining a blood sample from the subject and staining the tissue section with Tartrate Resistant Acid Phosphatase (TRAP), counting how many multinucleated cells there are in the sample from the subject, and comparing the number of multinucleated cells in the blood sample from the subject to a number of multinucleated cells in a blood sample from a healthy control subject having no erosive arthritis, wherein greater than 2.5 times more multinucleated cells in the sample from the subject than in the sample from the healthy control indicates erosive arthritis in the subject.